UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,677	01/28/2000	Kaoru Sato	43890-401	2531

20277 7590 02/27/2002

MCDERMOTT WILL & EMERY
600 13TH STREET, N.W.
WASHINGTON, DC 20005-3096

EXAMINER
LEO, LEONARD R

ART UNIT	PAPER NUMBER
3743	

DATE MAILED: 02/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/493,677	Applicant(s) Sato et al.
	Examiner Leonard R. Leo	Art Unit 3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *August 22 and December 5, 2001*.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1, 2, 4-9, 15-17, and 19-24* is/are pending in the application.

4a) Of the above, claim(s) *2 and 16* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1, 4-9, 15, 17, and 19-24* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

Claims 3 and 18 are cancelled, claims 1-2, 4-9, 15-17 and 19-24 are pending.

Election/Restriction

Applicant's election with traverse of the species of Figure 3b in Paper No. 15 is acknowledged. The traversal is on the ground(s) that the species of Figures 2c, 2d and 2e are different from the species of Figures 3b, 4a and 4b, the former being restricted in the Office action mailed October 17, 2000. This is not found persuasive because the species requirement in Figures 3b, 4a and 4b is still proper. The Examiner agrees to the extent that the species are usable together. The language of the claims are effectively *Markush* groups: trapezoid, triangle, and a shape whose sectional width decreases. Applicants' previous election of the latter *Markush* group is broad so as to include both the trapezoid and triangle, yet also Figure 2e. The Examiner requests clarification as to which depicted species is elected. Clearly, Figure 2e is capable of structural definition, while not being read as a trapezoid or triangle.

The requirement is still deemed proper and is therefore made FINAL.

As noted in the response filed December 5, 2001, claims 2 and 16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-9, 17 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite. While the Examiner understands applicants' intention as discussed in the response filed August 22, 2001, the claim language does not clearly convey this intention.

Claim 6 recites the limitation "the column side" in line 6. There is insufficient antecedent basis for this limitation in the claim. Furthermore, as best understood, the claim is indefinite, since the "vertical distance" recitation only reads on the protrusions "at a predetermined angle against the heat receiving face." Applicants' Figures 3(b) and 4(a) provide support for this limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5 (as understood) and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Elgar et al (Figure 2, page 2 line 26 to page 3, line 9). The intermediate product of Elgar et al, i.e. after slitting and before splaying, meets the claimed invention.

Claims 1, 5 (as understood), 6-7, 9 (as understood), 15, 17 (as understood), 19, 22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Marton (Figure 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 15, 17, 19-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elgar et al in view of Lin.

Elgar et al discloses all the claimed limitations except protrusions on the pillar-type protrusions.

Lin discloses a heat sink comprising a column 13 and a plurality of pillar-type protrusions 11 with unlabeled protrusions for the purpose of improving heat exchange.

Since Elgar et al and Lin are both from the same field of endeavor and/or analogous art, the purpose disclosed by Lin would have been recognized in the pertinent art of Elgar et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Elgar et al protrusions on pillar-type protrusions for the purpose of improving heat exchange as recognized by Lin.

Regarding claims 15, 17, 19-21 and 23, Lin discloses fan 30 mounted on the heat sink.

Claims 8 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marton in view of Lee.

Marton discloses all the claimed limitations except protrusions on the pillar-type protrusions.

Lee discloses a heat sink comprising a plurality of pillar-type protrusions 16 with protrusions 26 for the purpose of improving heat exchange.

Since Marton and Lee are both from the same field of endeavor and/or analogous art, the purpose disclosed by Lee would have been recognized in the pertinent art of Marton.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Marton protrusions on pillar-type protrusions for the purpose of improving heat exchange as recognized by Lee.

Response to Arguments

The rejection of claim 6 was inadvertently omitted, this Office action is nonfinal.

The rejections in view of Hatada et al, Kuno et al and Jordan et al are withdrawn.

Regarding applicants' remarks with respect to the secondary reference of Lin, one of ordinary skill in the art clearly recognizes the use of protrusions on fins to increase the turbulence to improve heat exchange. This concept is not explicitly disclosed in Lin, because it basic and fundamental. Schultz discloses the art recognition of protrusions on fins. For the record, turbulent flow increases the heat transfer rate, since the thermal boundary layer is reduced. Laminar flow fails to reduce the thermal boundary layer and the heat transfer is reduced. Regarding claims 15-21, the secondary reference of Lin clearly teaches one of ordinary skill in the art to employ a fan to improve air flow and heat exchange. The test for obviousness is not

whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry of a general nature, relating to the status of this application or clerical nature (i.e. missing or incomplete references, missing or incomplete Office actions or forms) should be directed to the Technology Center 3700 Customer Service whose telephone number is (703) 306-5648.

Any inquiry concerning this Office action should be directed to Leonard R. Leo whose telephone number is (703) 308-2611.

Leonard R Leo

LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3743

February 25, 2002